

EJERCICIO INCERTIDUMBRE Y SEGUROS (2)

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a) Riqueza esperada con seguro:

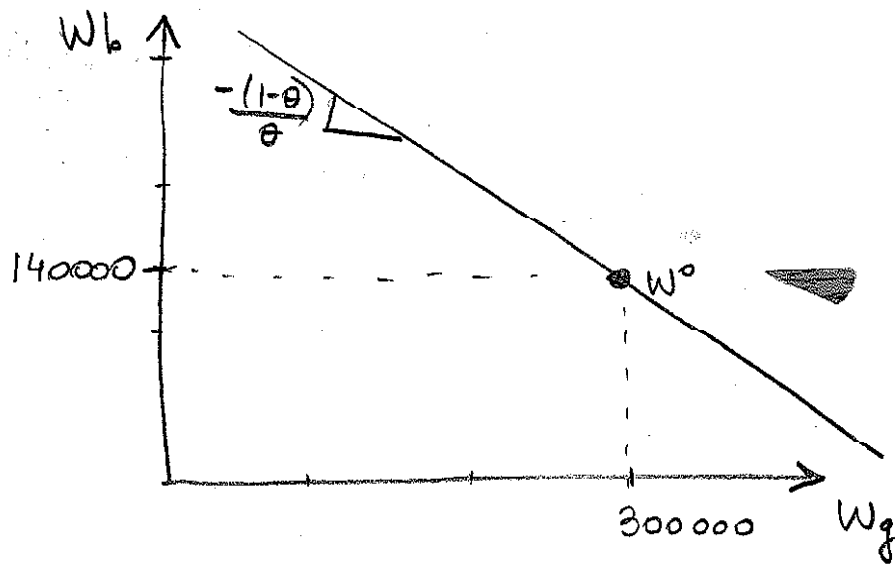
$$W_b = 300000 - 160000 + (1-\theta)K = 140000 + (1-\theta)K$$

$$W_g = 300000 - \theta K$$

Riqueza inicial:

$$W^0 = (300000, 140000)$$

$$\frac{dW_b}{dW_g} = \frac{(1-\theta)K}{-\theta K} = -\frac{(1-\theta)}{\theta}$$



$$b) U(W-X) = 0,1 U(140000) + 0,9 U(300000)$$

$$(i) U = \ln W$$

$$\ln(W-X) = 0,1 \ln(140000) + 0,9 \ln(300000)$$

$$\ln(300000 - X) = 1,18494 + 11,3504 = 12,535$$

$$300000 - X = \exp^{(12,535)}$$

$$300000 - 277985 = X = 22015$$

(ii) $U = W^{1/2}$

$$(300000 - X)^{1/2} = 0,1 (140000)^{1/2} + 0,9 (300000)^{1/2}$$

$$(300000 - X)^{1/2} = 37,417 + 492,95 = 530,367$$

$$300000 - 281289 = X = 18711$$

(iii) $U = aW$

$$a (300000 - X) = a [0,1 (140000) + 0,9 (300000)] =$$

$$300000 - X = 284000$$

$$X = 16000$$

c) $\pi 160000 = 0,1 (160000) = 16000$

Se asegura totalmente en los tres casos

d) Seguro: $W_b = 140000 - 0,1 K + 0,8 K = 140000 + 0,7 K$
 $W_g = 300000 - 0,1 K$

$$\text{Max}_K \quad 0,1 U(140000 + 0,7K) + 0,9 U(300000 - 0,1K)$$

$$\text{CPO: } 0,1 U'(W_b) 0,7 + 0,9 U'(W_g) (-0,1) = 0$$

$$0,7 U'(W_b) = 0,9 U'(W_g)$$

$$(i) \ln W = U$$

$$U'(W) = \frac{1}{W}$$

$$0,7 \frac{1}{W_b} = 0,9 \frac{1}{W_g}$$

$$0,7 (300000 - 0,1K) = 0,9 (140000 + 0,7K)$$

$$84000 = 0,8K$$

$$\boxed{K = 105000}$$

$$(ii) U = W^{1/2}$$

$$U'(W) = \frac{1}{2} W^{-1/2}$$

$$\frac{0,7}{2} \frac{1}{(140000 + 0,7K)^{1/2}} = \frac{0,9}{2} \frac{1}{(300000 - 0,1K)^{1/2}}$$

$$0,35^2 (300000 - 0,1K) = 0,45^2 (140000 + 0,7K)$$

$$0,1225 (300000 - 0,1K) = 0,2025 (140000 + 0,7K)$$

$$300000 - \frac{0,2025}{0,1225} 140000 = \left(\frac{0,2025}{0,1225} 0,7 + 0,1 \right) K$$

$$\frac{68571}{1,257} = K = \boxed{54545}$$

$$(iii) 0,7a \neq 0,9a \quad \text{no se cumple}$$

$$K=0$$